17.0 Slick Rock, Colorado, Disposal Site

17.1 Compliance Summary

The Slick Rock, Colorado, Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I Disposal Site was inspected on May 5, 2008. The disposal cell and its associated surface water drainage features remain in good condition and are functioning as designed. Minor erosion, exacerbated by several large runoff events during the last 2 years, was still evident at the site; however, it does not threaten the disposal cell or site features. The culvert at the entrance gate, which showed increasing signs of erosion, was replaced with a larger-diameter culvert. Large gullies containing deep headcuts that had formed between the retention pond and the county access road were also repaired. Noxious weeds were re-treated with herbicide; these continued weed control efforts have significantly reduced infestations on the site. No other maintenance needs or cause for a follow-up or contingency inspection was identified.

17.2 Compliance Requirements

Requirements for the long-term surveillance and maintenance of the Slick Rock Disposal Site are specified in the *Long-Term Surveillance Plan* [LTSP] *for the Burro Canyon Disposal Cell, Slick Rock, Colorado* (DOE/AL/62350−236, Rev. 0, U.S. Department of Energy [DOE], Albuquerque Operations Office, May 1998) and in procedures established by DOE to comply with the requirements of Title 10 *Code of Federal Regulations* Part 40.27 (10 CFR 40.27). These requirements are listed in Table 17−1.

Table 17-1. License Requirements for the Slick Rock Disposal Site

Requirement	Long-Term Surveillance Plan	This Report
Annual Inspection and Report	Sections 3.0 and 6.2	Section 17.3.1
Follow-Up or Contingency Inspections	Section 3.4	Section 17.3.2
Routine Maintenance and Repairs	Section 4.0	Section 17.3.3
Groundwater Monitoring	Sections 2.5 and 2.6	Section 17.3.4
Corrective Action	Section 5.0	Section 17.3.5

Institutional Controls—The 62-acre disposal site is owned by the United States of America and was accepted under the U.S. Nuclear Regulatory Commission (NRC) general license (10 CFR 40.27) in 1998. DOE is the licensee and, in accordance with the requirements for UMTRCA Title I sites, is responsible for the custody and long-term care of the site. Institutional controls at the disposal site, as defined by DOE Policy 454.1, consist of federal ownership of the property, a site perimeter fence, warning/no-trespassing signs placed along the property boundary, and a locked gate at the entrance to the site. Verification of these institutional controls is part of the annual inspection. Inspectors found no evidence that these institutional controls were ineffective or violated.

17.3 Compliance Review

17.3.1 Annual Inspection and Report

The site, northeast of Slick Rock, Colorado, was inspected on May 5, 2008. Results of the inspection are described below. Features and photograph locations (PLs) mentioned in this report are shown on Figure 17−1. Numbers in the left margin of this report refer to items summarized in the "Executive Summary" table.

17.3.1.1 Specific Site-Surveillance Features

Access Road, Gate, Fence, and Signs—Access to the site is off County Road T11, an improved gravel-and-dirt road maintained by San Miguel County. The road was in good condition at the time of the inspection, although minor erosion had occurred across the road just inside the entrance gate (PL–1). Since 2006, inspectors have noted that the 8-inch-diameter culvert, installed beneath the access road in 2004 to allow runoff to flow along the borrow ditch, was being continually eroded by stormwater runoff. In May 2008, inspectors noted that additional erosion was evident at both ends of the culvert (PL–2). Additionally, tumbleweeds (noted in the 2007 inspection) were still accumulating in the inlet to the culvert. As it was apparent that the
17A culvert's small diameter could not adequately handle storm runoff, the culvert was replaced with a 15-inch-diameter culvert in July 2008 (PL–3), and tumbleweeds present in the inlet were removed. The minor erosion across the access road was also repaired.

The entrance to the site is through a barbed-wire gate that is secured with a DOE lock. A wire stock fence surrounds the site; it does not coincide with the DOE property boundary. The top and bottom strands are smooth wire to allow wildlife to pass over or under, and the middle two wire strands are barbed. This fence had been dismantled and reconfigured in 2007 to enclose the disposal cell while excluding the reclaimed spoils pile. Two new 4-foot-wide, steel-tube pedestrian gates were also installed at that time. Both the entrance and pedestrian gates and the stock fence were in excellent condition at the time of the 2008 inspection.

The entrance sign is located inside the stock fence just east of the entrance gate and was in good condition. Thirty-two perimeter signs, designated P1 through P32, are spaced at approximately 200-foot intervals around the site. The signs, attached to steel posts set in concrete, are placed 5 feet inside the site boundary. As reported previously, the signpost at perimeter sign P1 has a bullet hole; however, it remains sturdy. All other perimeter signs were in excellent condition.

Site Markers and Monuments—The two granite site markers, SMK–1 near the entrance gate and SMK–2 on the north-central part of the disposal cell, were in excellent condition.

Six boundary monuments define the corners of the site boundary, and three survey monuments are located along the fence line. All of the monuments were located and were in excellent condition.

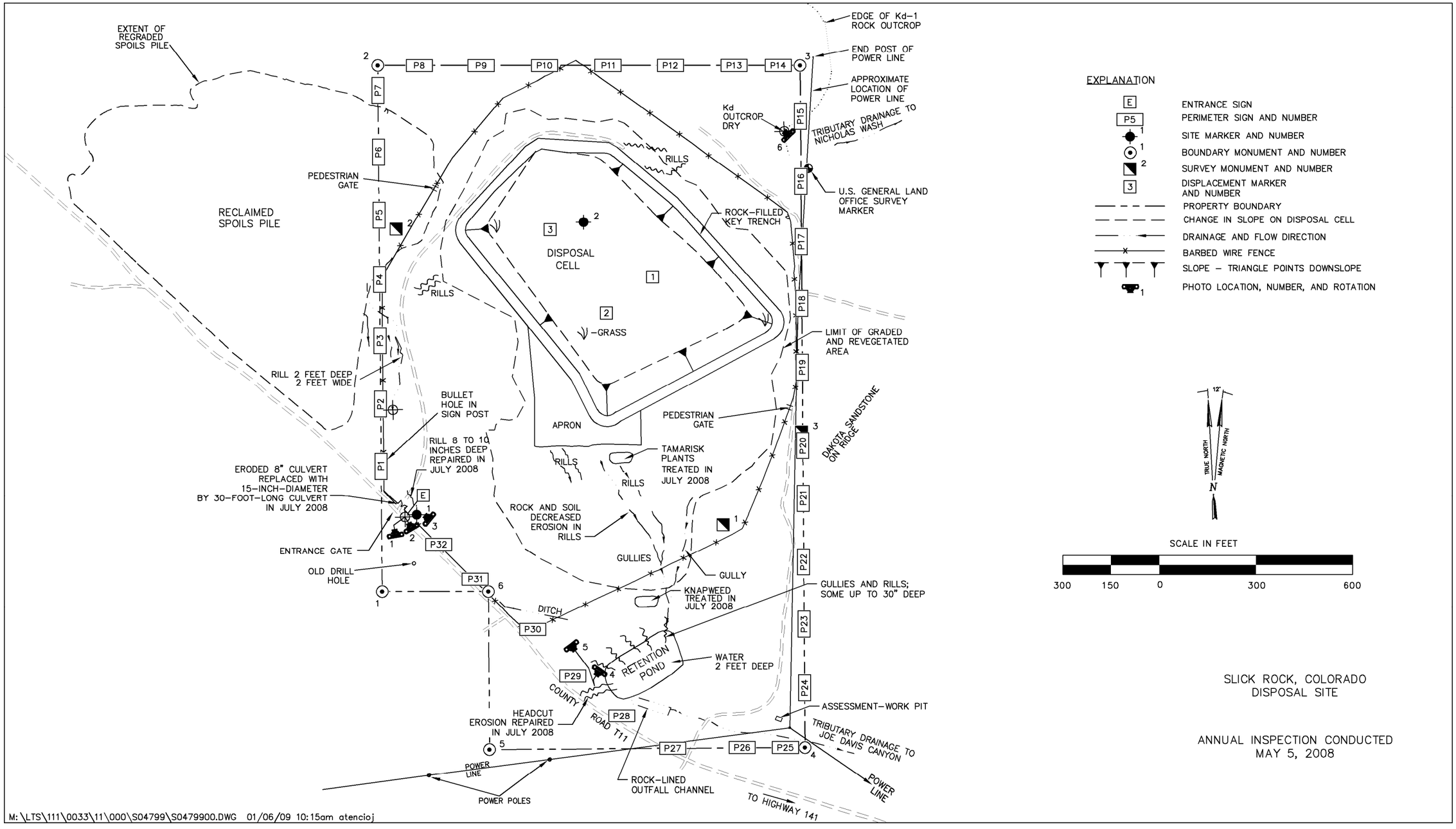

Figure 17–1. 2008 Annual Compliance Drawing for the Slick Rock Disposal Site

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17.3.1.2 Transects

To ensure a thorough and efficient inspection, the site was divided into three transects: (1) the rock-covered top of the disposal cell including side slopes, key trench, and apron; (2) the area between the disposal cell and the site boundary, including the stock pond, re-contoured and reseeded areas, and the stock fence; and (3) the outlying area.

Within each transect, inspectors examined specific site-surveillance features, such as survey and boundary monuments, signs, and site markers. Inspectors examined each transect for evidence of erosion, settling, slumping, or other disturbance that might affect site integrity or the long-term performance of the engineered portions of the site.

Disposal Cell, Side Slopes, Key Trench, and Apron—The disposal cell was completed in 1996. The top of the disposal cell is roughly pentagonal. Five side slopes descend from the top of the disposal cell at a maximum grade of 25 percent. The cell top and side slopes are covered with riprap. At the base of the side slopes is a key trench that encircles the disposal cell. The key trench is as much as 5 feet deep and 20 feet wide and filled with riprap. South and downslope from the disposal cell, an apron of riprap extends for 50 to 200 feet beyond the key trench. All side slopes, the key trench, and the apron remained in excellent condition.

Rock covering the disposal cell, key trench, and apron is rounded cobble- and pebble-sized material. No evidence of settling, slumping, or erosion was apparent on any of the rock-covered surfaces of the disposal cell. All rock and rock-covered features were in excellent condition.

Area Between the Disposal Cell and the Site Boundary—The area around the disposal cell includes the retention pond and the graded and reseeded areas. Surface drainage from the disposal cell flows south into the retention pond, which is constructed in a channel tributary to Joe Davis Canyon. An outflow channel below the pond is lined with rounded cobblestones for a short distance. The pond—which contained approximately 1 to 2 feet of water at the time of the inspection—was in good condition, as was the outflow channel.

Areas of erosion between the apron and the retention pond were repaired in 2004. Although the area downslope of the apron is stabilizing, some erosion is still occurring. Several large storm runoff events during the last 2 years had increased the size of gullies southwest and northwest of the retention pond. The largest gully, located southwest of the retention pond below the culvert outlet on the county road, was 10 feet wide by 35 feet in length, with a 7-foot-deep vertical headcut, at the time of the inspection (PL–4). A second gully, located a short distance to the
17B southeast and characterized by a 3-foot vertical headcut, had not increased in size since 2007 but was still in need of repair. Both of these headcuts were repaired in July 2008 (PL–5). Gullies previously noted on the northwest side of the retention pond are still as deep as 30 inches, but they do not present a hazard to the disposal cell or to any site feature. As such, action is still not warranted at this time. All of the aforementioned erosion areas will continue to be monitored as part of future inspections.

As noted during previous inspections, rills have formed down slope from the disposal cell apron between the apron and retention pond. In 2004, rock and soil were placed in the rills to disrupt runoff flow. During the 2008 inspection, some of these rill features still indicated erosion from recent stormwater runoff events, such as sedimentation and soil loss, but they do not present a hazard to the disposal cell. The rills east of perimeter signs P2 and P3, noted in previous

inspections, have increased in size in the last several years. The largest rill was approximately 2 feet wide by 2 feet deep, twice as deep as it was at the time of the 2007 inspection. These rills will be monitored in 2009 to determine if any mitigative action is warranted.

Since the last seeding effort in March 1999, vegetation around disturbed areas adjacent to the disposal cell has become well established with desirable species (e.g., wheatgrass and fescue); however, Russian thistle and cheatgrass are also present.

Several noxious weeds—including tamarisk, Russian knapweed, halogeton, and bindweed—have been identified at the disposal site during previous site inspections. Tamarisk, previously identified below the rock apron and around the retention pond, was thought to have been eradicated in 2001. Russian knapweed, halogeton, and bindweed have been sprayed annually since 2005. During the 2008 inspection, several shoots of tamarisk were again noted below the eastern third of the rock apron. Additionally, as observed in the 2007 inspection, Russian knapweed was found in an area northwest of the retention pond; all areas were marked. These noxious weeds were treated with herbicide by a licensed applicator in July 2008.

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Outlying Area—During the construction of the disposal cell, material excavated from the site was placed in a 60-foot-high spoils pile on the west side of the site. The U.S. Bureau of Land Management (BLM) granted DOE a right-of-way permit (COC–57851) that encompassed the spoils pile and the former staging area adjacent to the site entrance. This permit was terminated in 2006 when BLM agreed that the permit area had been successfully reclaimed.

The Kd–1 (Dakota) sandstone unit, which crops out near the northeast corner of the property, was identified in the LTSP as a potential pathway of lateral migration of transient drainage from the disposal cell. In 2007, inspectors noted that minor erosion of the surface had taken place along the outcrop; however, there was no evidence of moist soil, mineralization, or phreatophyte vegetation that would indicate that transient drainage is occurring along this interface. The latter was still the case at the time of the 2008 inspection (PL–6).

The natural, undisturbed areas outside the disposal site support grass and scattered piñon and juniper trees. The primary land use is grazing. Steep hillsides north and northeast of the site slope eastward into Nicholas Wash. Areas north and northeast of the site are routinely used for recreational purposes (e.g., hunting, four-wheeling, firewood cutting). No new disturbances in the outlying areas were noted at the time of the inspection.

The U.S. Energy Corporation uranium exploration drill hole discovered in 2006, just outside the site boundary between boundary monuments BM–5 and BM–6, along the southwest side of the site was reclaimed, and no new activity was observed. However, because the surrounding area contains reserves of uranium and vanadium, additional new mining activity may occur in the future.

17.3.2 Follow-Up or Contingency Inspections

DOE will conduct follow-up inspections if (1) a condition is identified during the annual inspection or other site visit that requires a return to the site to evaluate the condition, or (2) DOE is notified by a citizen or outside agency that conditions at the site are substantially changed.

No follow-up or contingency inspections were required in 2008.

17.3.3 Routine Maintenance and Repairs

In 2008, for erosion control purposes, DOE replaced the 8-inch-diameter culvert at the entrance gate near the country road with a 15-inch-diameter culvert. Minor erosion across the access road just inside the entrance gate was also repaired. Two large gullies containing deep headcuts that had formed southwest of the retention pond were repaired. As part of an ongoing weed maintenance program, several areas where noxious weeds were noted were re-treated with herbicide.

17.3.4 Groundwater Monitoring

DOE does not monitor groundwater at this site because there is no preexisting contaminant plume at the disposal site and because the uppermost aquifer is of limited use since it is not a current or potential source of drinking water (due to low yield) (40 CFR 192.21 [g]).

17.3.5 Corrective Action

Corrective action is taken to correct out-of-compliance or hazardous conditions that create a potential health and safety problem or that may affect the integrity of the disposal cell or compliance with 40 CFR 192.

No corrective action was required in 2008.

17.3.6 Photographs

Table 17–2. Photographs Taken at the Slick Rock Disposal Site

Photograph Location Number	Azimuth	Description
PL–1	350	Gulley across access road just inside entrance gate; repaired in July 2008.
PL–2	330	View of outlet with eroded 8-inch-diameter culvert (May 2008)
PL–3	315	Outlet of newly installed 15-inch-diameter replacement culvert (July 2008).
PL–4	215	Primary gully below county road with 7-foot-deep vertical headcut, repaired in July 2008.
PL–5	145	July 2008 erosion repair of primary gully.
PL–6	315	Kd–1 (Dakota) sandstone outcrop.

SRK 5/2008. PL–1. Gulley across access road just inside entrance gate; repaired in July 2008.

SRK 5/2008. PL–2. View of outlet with eroded 8-inch-diameter culvert (May 2008).

SRK 7/2008. PL–3. Outlet of newly installed 15-inch-diameter replacement culvert (July 2008).

SRK 5/2008. PL–4. Primary gully below county road with 7-foot-deep vertical headcut, repaired in July 2008.

SRK 7/2008. PL–5. July 2008 erosion repair of primary gully.

SRK 5/2008. PL–6. Kd–1 (Dakota) sandstone outcrop.